

#11/Response

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Hawkins

7-11-02

In re Application of:

Stephen D. Smith et al.

Serial No.: 09/579,997

Filed: May 26, 2000

For: MODULAR MOTOR AND
HOUSING§
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Group Art Unit: 2834

Examiner: Lam, T.

Atty. Docket: REDA:0093/VAN
89.0425Assistant Commissioner
for Patents
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37 C.F.R. 1.8

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JUL 9 2002

RESPONSE TO OFFICIAL ACTION

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In the Official Action mailed on May 9, 2002, claims 1-16 and 21-23 were rejected. Reconsideration of the rejection and allowance of the pending claims are respectfully requested.

Rejection Under 35 U.S.C. § 102(b)

In the Official Action, claims 1, 2, 6, 14, 15, and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by Rabson, U.S. Patent No. 4,815,949. Applicants respectfully traverse the rejection. Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every element or step of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984).

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Claims 1, 2, 6 are not anticipated because the Rabson reference does not show each element of claims 1, 2, and 6. Claims 2 and 6 depend from independent claim 1. Independent claim 1 recites the following:

1. An electric motor, comprising:

a plurality of stator sections, each stator section including an outer housing, wherein the plurality of stator sections are mechanically and electrically coupleable to form a stator of a desired length; and

a rotor, disposed within the plurality of stator sections.

One of the recited features of claim 1 that is not shown by the Rabson reference is "a rotor disposed within the plurality of stator sections." The electric motor of the Rabson reference is a reciprocating electric motor, i.e., a linear electric motor. *See Rabson*, Abstract and col. 4, lines 3-5. The reciprocating electric motor of Rabson has an armature or mover 83 for reciprocation coaxially with the housing 77. *See Rabson*, col.2, line 67-col. 3, line 2. The armature or mover 83 of the Rabson reference simply does not rotate or revolve. Rather, the field winding 91 of the Rabson reference causes the armature 83 to reciprocate in a linear up-and-down manner to drive a pump piston. *See Rabson*, col. 3, lines 45-68. Therefore, the armature or mover 83 of the Rabson reference is not a rotor.

In the Response to Arguments portion of the Official Action mailed on May 9, 2002, the Examiner stated that:

In response to applicant's argument that "Rabson reference has an armature or mover 83, not a rotor." The examiner submits that Rabson reference discloses electric motors (col. 1, line 9) that inherently have a stator and a rotor as known in the electric motor art. Furthermore, the term "armature 83" as disclosed by Rabson is a rotor as clearly defined by Webster's dictionary (see a highlight of the attached copy).

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The copy of Webster's dictionary that was provided by the Examiner contained several definitions of the word "armature." Among other definitions of the word "armature," Webster's dictionary defined an "armature" as: "2.b.: a usu. rotating part of an electric machine (as a generator or motor) which consists essentially of coils of wire around a metal core and in which electric current is induced or in which the input current interacts with a magnetic field to produce torque." Another definition of "armature" found in the copy of Webster's dictionary provided by the Examiner is: "2.c: the moveable part of an electromagnetic device (as a loudspeaker)."

However, identifying an item as an "armature" does not make the item a "rotor." That a rotating part of an electric machine may be defined as an "armature" is irrelevant, because the "armature" in the Rabson reference does not rotate or revolve.

On the other hand, the definition of a "rotor" provided by Webster's Collegiate dictionary does require a part to revolve or rotate. Webster's Collegiate dictionary defines a "rotor" as: "1.a.: a part that revolves in a stationary part" and "b.: the rotating member of an electrical machine." Therefore, the armature or mover 83 of the Rabson reference may satisfy the definition of the word "armature," but it does not satisfy the definition of the word "rotor." Thus, the Rabson reference does not show "a rotor disposed within the plurality of stator sections."

Other recited features of claim 1 that are not shown by the Rabson reference are "a plurality of stator sections, *each stator section including an outer housing*, wherein the plurality of stator sections are mechanically and electrically coupleable to form a stator of a desired length." In the Rabson reference, a plurality of coils 92 are stacked coaxially within a motor housing 77 on a support tube 113. *See Rabson*, col. 4, lines 5-7. The coils 92 are stacked in groups, each group constituting one motor stator module or unit. *See Rabson*, col. 4, lines 8-11. However, all of the coils 92 are housed within a single motor housing 77. Therefore, only a single stator section is shown in the Rabson reference because all of the coils 92 are housed in a single outer housing 77. Therefore, the motor 75 of the Rabson reference does not disclose "a plurality of stator sections."

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Furthermore, the Rabson reference does not disclose "a plurality of stator sections, wherein the plurality of stator sections are *mechanically coupleable*." The Rabson reference does not disclose that either the individual coils 92 or the motor stator modules are mechanically coupleable to other individual coils 92 or motor stator modules. Therefore, the Rabson reference does not disclose "a plurality of stator sections, each stator section including an outer housing, wherein the plurality of stator sections are mechanically coupleable," as recited in claim 1. Finally, neither the individual coils 92, nor the motor stator modules or units, are mechanically and electrically coupleable to form a stator *of a desired length*. The length of the single outer housing 77, not the individual coils 92 or the motor stator modules or units, defines the length of the field winding 91 of the Rabson reference. For all of these reasons, independent claim 1 and dependent claims 2 and 6 are not anticipated by the Rabson reference.

Additionally, claims 14 and 15 also are not anticipated by the Rabson reference. Claim 15 depends from independent claim 14. Independent claim 14 recites the following:

14. A submersible pumping system, comprising:
- a submersible electric motor, including:
 - a plurality of modular motor sections, each motor section includes a stator section and a housing section, wherein the modular motor sections are mechanically and electrically coupleable to form a motor of a desired length;
 - a rotor disposed within the plurality of modular motor sections;
 - and
 - a submersible pump, drivingly coupled to the rotor of the submersible electric motor.

As with claim 1, one of the recited features of claim 14 that is not disclosed by the Rabson reference is "a rotor disposed within the plurality of modular motor sections." As discussed above, the motor 75 of the Rabson reference is a linear electric motor. The armature or

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mover 83 of the motor 75 of the Rabson reference simply does not revolve or rotate. Therefore, the armature or mover 83 of the Rabson reference is not a rotor.

Furthermore, the Rabson reference does not teach a plurality of modular motor sections. The only housing section shown in the Rabson reference is the single outer housing 77. Therefore, the Rabson reference only discloses a single stator section because only a single outer housing is shown by the cited reference. The Rabson reference simply does not disclose a plurality of modular motor sections wherein *each* modular motor section includes a stator section *and* a housing section. Furthermore, the stacked component stator of Rabson is not a modular motor section. Although the coils of Rabson may be stacked, the field winding 91 of the Rabson reference does not reflect modular motor sections. Electrical connectors 163 and 165 of Rabson require connectors 167 in order to interconnect the groups of coils. *See Rabson*, col. 5, lines 21-30. To create sets of coils for the linear motor of Rabson, connectors 167 are necessary to connect each coil in each group of one set to a corresponding coil in another group of that same set. Thus, connectors 167 must be run from connectors 163 and 165 of one coil, to the outer edge of the coil, along the outside of a group of coils, to the outer edge of another coil in another group of that set and, finally, to connectors 163 and 165. *See Rabson*, Fig. 5. This connection process must be completed coil-by-coil as the individual coils are stacked, not just as each group of coils is stacked. The motor 75 of the Rabson reference simply does not disclose a rotor or a plurality of modular motor sections. Therefore, the Rabson reference does not show "a rotor disposed within the plurality of modular motor sections," as recited in claim 14.

Other recited features of claim 14 that are not disclosed by the Rabson reference are "a plurality of modular motor sections, each motor section includes a stator section and a housing section, wherein the modular motor sections are mechanically and electrically coupleable to form a motor of a desired length." First, as discussed above, the motor 75 of the Rabson reference does not comprise a plurality of modular motor sections, wherein each motor section includes a housing section. Second, the Rabson reference does not disclose "a plurality of modular motor sections, wherein the plurality of modular motor sections are *mechanically coupleable*." The Rabson reference does not disclose that either the individual coils 92 or the motor stator modules

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are mechanically coupleable to other individual coils 92 or motor stator modules. Therefore, the Rabson reference does not disclose "a plurality of modular motor sections, wherein the modular motor sections are mechanically and electrically coupleable," as recited in claim 14. Finally, neither the individual coils 92 nor the motor stator modules or units are mechanically and electrically coupleable to form a motor *of a desired length*. The length of the single outer housing 77, not the individual coils 92 or the motor stator modules or units, defines the length of the field winding 91 of the Rabson reference. For all of these reasons, independent claim 14 and dependent claim 15 are not anticipated by the Rabson reference.

Independent claim 21 also is not anticipated by the Rabson reference. Independent claim 21 recites the following:

21. An electric motor for a submergible pumping system, comprising:

a plurality of stator sections adapted to form a stator of a desired length, wherein each of the plurality of stator sections comprises a mechanical and electrical coupling to permit selective attachment to an adjacent stator section ; and

a rotor disposed within the plurality of stator sections.

One of the recited features of claim 21 that is not disclosed by the Rabson reference is a rotor. As discussed above, the motor 75 of the Rabson reference is a linear electric motor, not a rotary electric motor. The armature or mover 83 does not revolve or rotate. Therefore, the armature or mover 83 of the Rabson reference is not a rotor.

Furthermore, the Rabson reference does not teach "a plurality of stator sections adapted to form a stator of a desired length, wherein each of the plurality of stator sections comprises a mechanical and electrical coupling to permit selective attachment to an adjacent stator section." The Rabson reference does not disclose that either the individual coils 92 or the motor stator modules has a mechanical coupling to permit selective attachment to an adjacent coil 92 or motor stator module. Therefore, the Rabson reference does not anticipate claim 21.

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For all of these reasons, the Rabson reference does not anticipate claims 1, 2, 6, 14, 15, and 21. Withdrawal of the rejection and allowance of claims 1, 2, 6, 14, 15, and 21 are respectfully requested.

First Rejection Under 35 U.S.C. § 103

Claims 3-5, 16, and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Rabson in view of Schob, U.S. Patent No. 5,939,813. This rejection is respectfully traversed. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

Claims 3-5, 16, and 22 are patentable because the cited references do not show all of the recited features of the claims. Claims 3-5 depend from independent claim 1, claim 16 depends from independent claim 14, and claim 22 depends from independent claim 21. As discussed above, the Rabson reference does not disclose all of the recited features of claims 1, 14, and 21.

Some of the recited features of independent claim 1 that are not shown by the Rabson reference are "a plurality of stator sections, each stator section including an outer housing, wherein the plurality of stator sections are mechanically and electrically coupleable to form a

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stator of a desired length." In addition, the Schob reference also fails to teach, disclose, or suggest these recited features of independent claim 1. Furthermore, the combination of the Rabson and Schob references also fails to teach, disclose, or suggest these recited features. Therefore, independent claim 1 is nonobvious and patentable over the cited references. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, claims 3-5 also are nonobvious and patentable over the cited references.

Also as discussed above, some of the recited features of independent claim 14 that are not shown by the Rabson reference are "a plurality of modular motor sections, each motor section includes a stator section and a housing section, wherein the modular motor sections are mechanically and electrically coupleable to form a motor of a desired length." The Schob reference also fails to teach, disclose, or suggest these recited features of independent claim 14. Furthermore, the combination of the Rabson and Schob references also fails to teach, disclose, or suggest these recited features. Therefore, independent claim 14 and claim 16, which depends from claim 14, are nonobvious and patentable over the Rabson and Schob references.

Finally, some of the recited features of independent claim 21 that are not shown by the Rabson reference are "a plurality of stator sections adapted to form a stator of a desired length, wherein each of the plurality of stator sections comprises a mechanical and electrical coupling to permit selective attachment to an adjacent stator section." The Schob reference also fails to teach, disclose, or suggest these recited features of independent claim 21. In addition, the combination of the Rabson and Schob references also fails to teach, disclose, or suggest these recited features of independent claim 21. Therefore, independent claim 21 and claim 22, which depends from claim 21, are nonobvious and patentable over the Rabson and Schob references.

Furthermore, claims 3-5, 16, and 22 are patentable because there is no suggestion to combine the references. In the Official Action, the Examiner stated that:

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stator sections of Rabson to accommodate the stator sections to allow the fluid flows therethrough as taught by Schob. The fluid flows (sic) the stator sections in order to provide an improvement of cooling of the stator sections.

However, as discussed above, the Rabson reference is a linear electric motor. The Schob reference, on the other hand, is a rotary electric motor. A linear electric motor operates in a far different manner than a rotary electric motor. Most significantly, the stator sections of a linear electric motor and a rotary electric motor are different in design and operation. Namely, the stator of a linear electric motor and the stator of a rotary electric motor are adapted to arrange their stator windings in different orientations. It would not be obvious to one of ordinary skill in the art to adapt the stator of a linear electric motor in accordance with the stator of a rotary electric motor. For all of these reasons, claims 3-5, 16, and 22 are patentable over the cited references. Withdrawal of the rejection and allowance of claims 3-5, 16, and 22 are respectfully requested.

Second Rejection Under 35 U.S.C. § 103

Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Rabson in view of Ekstromer, U.S. Patent No. 2,098,958. Claim 13 is patentable because the cited references do not show all of the recited features of the claims. Claim 13 depends from independent claim 1. As discussed above, the Rabson reference does not disclose all of the recited features of claim 1. For example, some of the recited features of claim 1 that are not shown by the Rabson reference are "a plurality of stator sections, each stator section including an outer housing, wherein the plurality of stator sections are mechanically and electrically coupleable to form a stator of a desired length." The Ekstromer reference discloses a series of motors coupled together, each motor having their own separate primary or stator winding 25. The motors of the Ekstromer reference do not combine to form a stator. Therefore, the Ekstromer reference does not disclose all of the recited features of independent claim 1. In addition, the combination of the Rabson and Ekstromer references does not teach, disclose, or suggest "a plurality of stator sections, each stator section including an outer housing, wherein the

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plurality of stator sections are mechanically and electrically coupleable to form a stator of a desired length." Therefore, claim 1 and claim 13, which depends from claim 1, are nonobvious and patentable over the cited references.

Furthermore, claim 13 is patentable because there is no suggestion to combine the references. In the Official Action, the Examiner stated that:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the stator sections of Rabson and modify to adapt the stator sections of Ekstromer, having a plurality of conductors or conductive elements (38) including a hollow receptacle (36 fig. 4) sized to (sic) received a corresponding protrusion (37) in order to improve electrically and mechanically connection between the stator sections.

As discussed above, the Rabson reference is a linear electric motor. The Ekstromer reference discloses a plurality of rotary electric motors coupled together. The linear electric motor of Rabson operates in a far different manner than the rotary electric motor of Ekstromer. More importantly, the stator sections of the two references are completely different in design and operation. It would not be obvious to one of ordinary skill in the art to adapt the stator of the linear electric motor of Rabson in accordance with the stator of the rotary electric motor of Ekstromer. For all of these reasons, withdrawal of the rejection and allowance of claim 13 are respectfully requested.

Third Rejection Under 35 U.S.C. § 103

Claims 7-12 and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabson in view of Ekstromer, U.S. Patent No. 1,960,484. Claims 7-12 and 23 are patentable because the cited references do not show all of the recited features of the claims. Claims 7-12 depend from independent claim 1. In addition, claim 23 depends from independent claim 21. As discussed above, the Rabson reference does not disclose all of the recited features of independent claims 1 and 21. Therefore, the Rabson reference does not disclose all of the recited features of claims 7-12 and 23. The Ekstromer reference does not obviate the deficiencies of the Rabson

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reference, because it does not disclose, teach or suggest, the various elements missing from the Rabson reference. Therefore, claims 7-12 and 23 are patentable over the cited references. Withdrawal of the rejection and allowance of claims 7-12 and 23 are respectfully requested.

General Authorization for Extensions of Time

In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Applicants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 06-1315; Order No. REDA:0093/VAN (89.0425).

Conclusion

In view of the above remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: July 9, 2002



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